

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

LESSON ONE - *Slope of a Line*

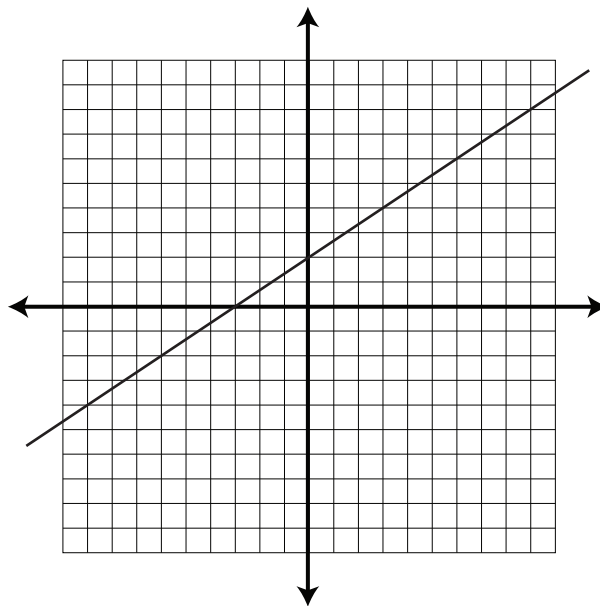
Lesson Notes

Introduction

Find the slope of each line.

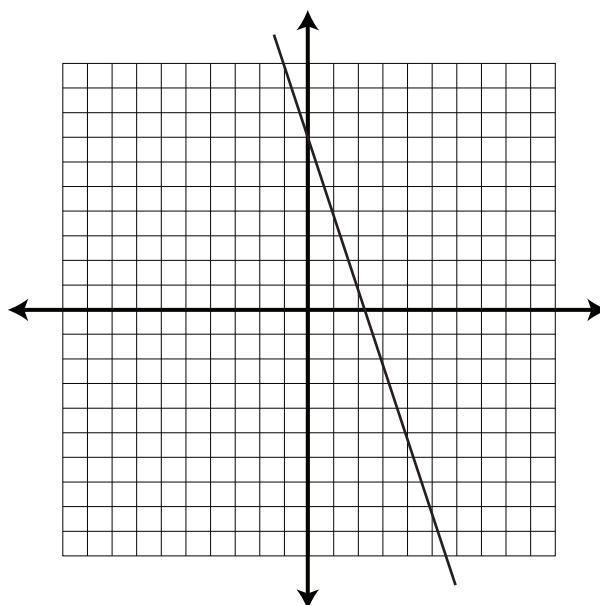
a) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



b) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



Linear Functions

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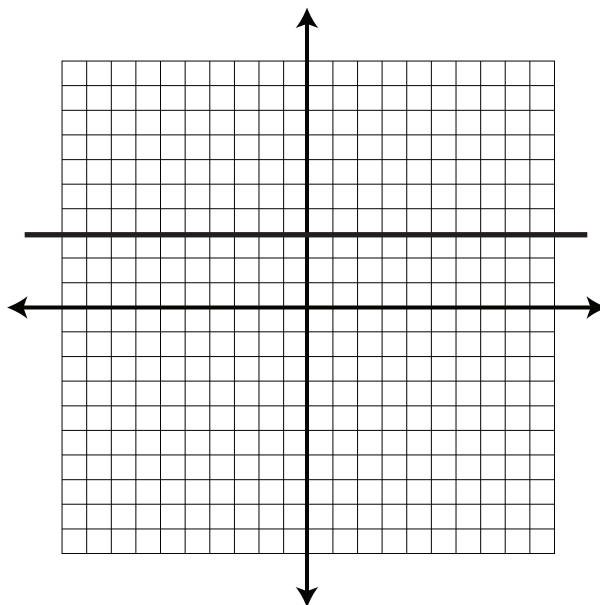
Lesson Notes

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



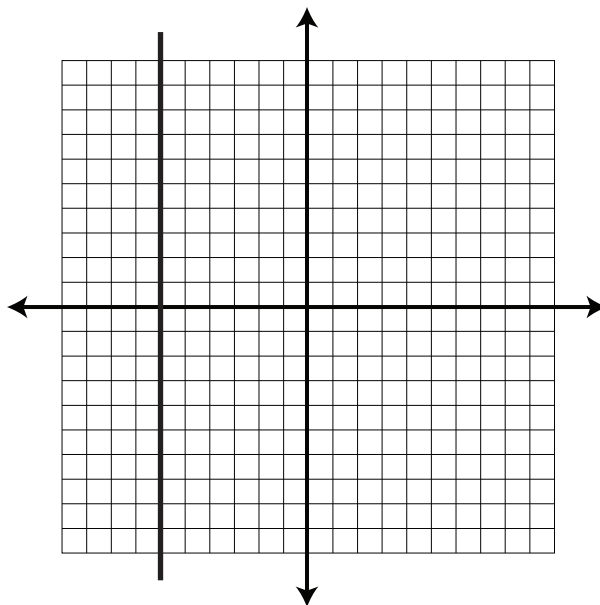
c) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



d) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

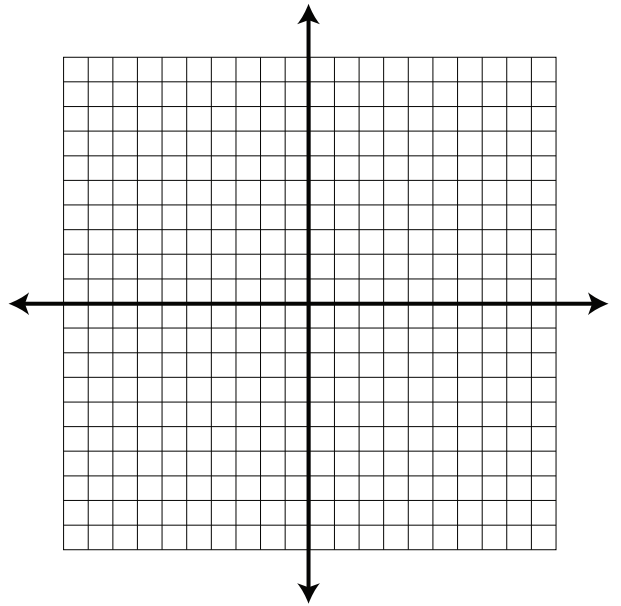
LESSON ONE - *Slope of a Line*

Lesson Notes

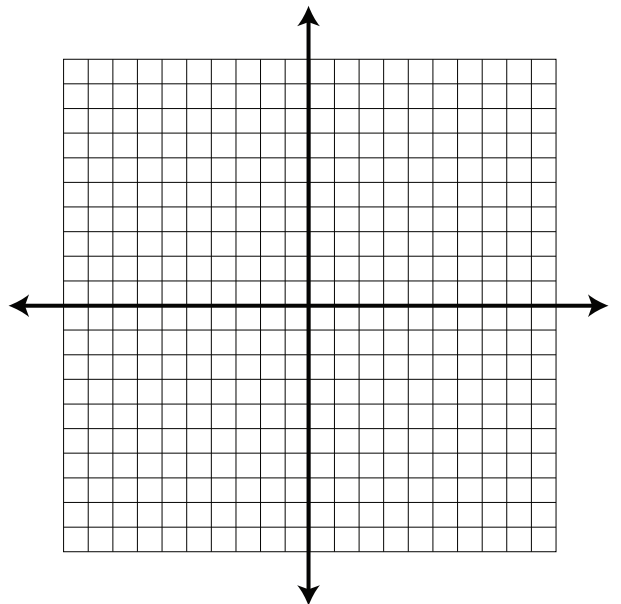
Example 1

For each pair of points, graph the line and calculate the slope.

a) A line passes through (-3, 7) and (9, -1).



b) A line passes through (0, -3) and (0, 3)



Linear Functions

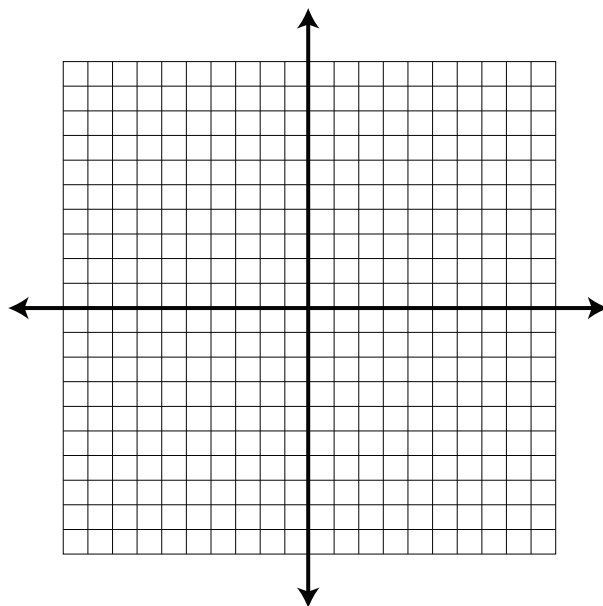
LESSON ONE - *Slope of a Line*

Lesson Notes

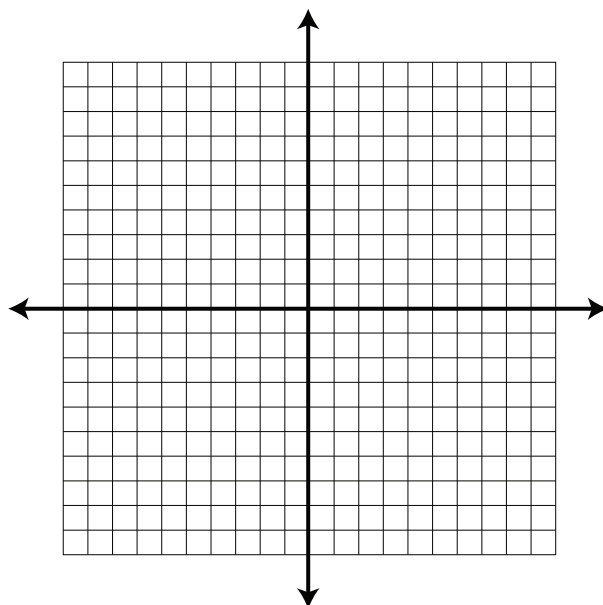
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



c) A line passes through (-10, -10) and (10, -10).



d) A line passes through (-3, -5) and (6, 7).



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

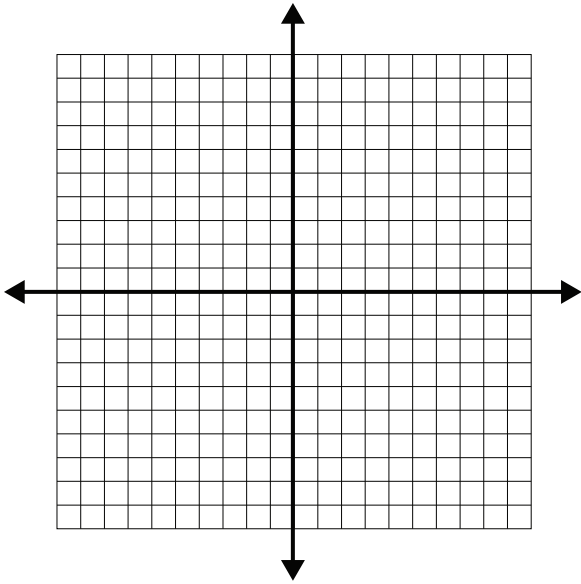
LESSON ONE - *Slope of a Line*

Lesson Notes

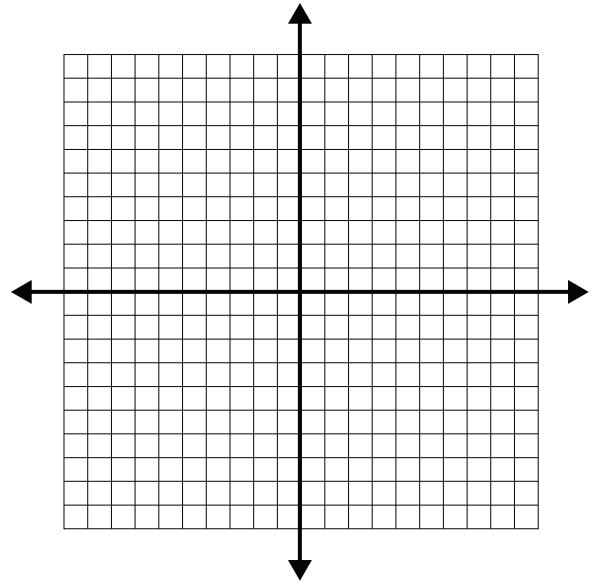
Example 2

Draw each of the following lines, given the slope and a point on the line.

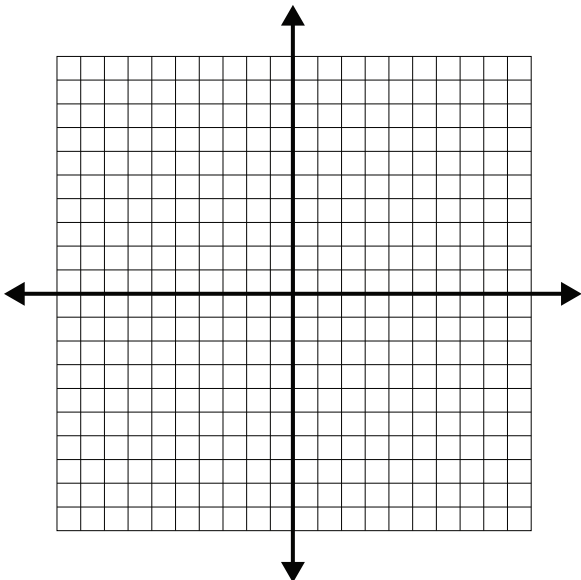
a) Slope = $\frac{1}{3}$, Point = (-4, -5)



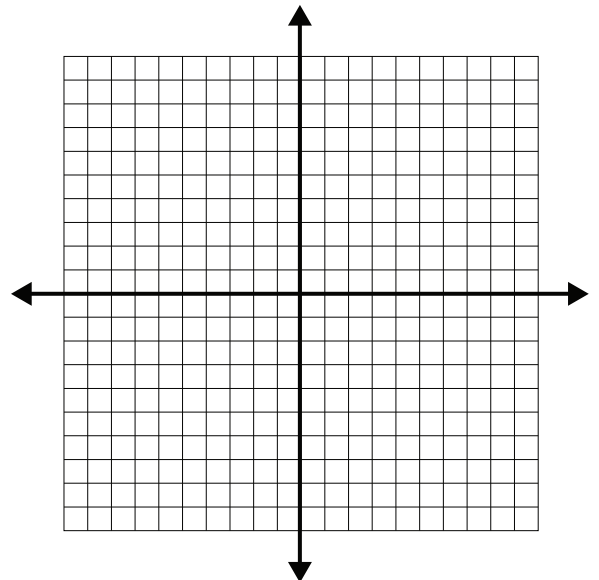
b) Slope = -2, Point = (-3, 7)



c) Slope = undefined, Point = (6, -2)




d) Slope = 0, Point = (-8, 9)



Linear Functions

LESSON ONE - *Slope of a Line*

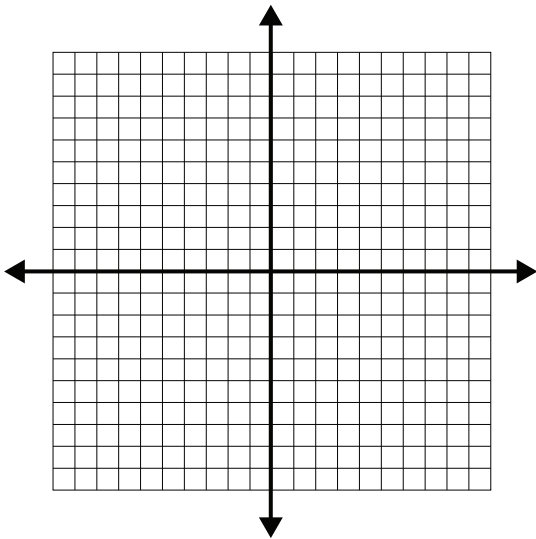
Lesson Notes

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Example 3

a) A line has points located at $(-3, 5)$ and $(4, a)$. What is the value of a if the slope is -2 ?
Solve this question both graphically and algebraically.

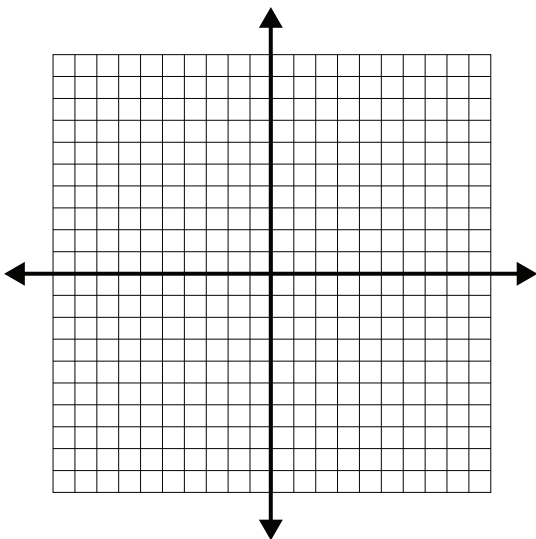
Graphical Solution



Algebraic Solution

b) A line has points located at $(a, 3)$ and $(2, 9)$. What is the value of a if the slope is $\frac{3}{5}$?
Solve this question both graphically and algebraically.

Graphical Solution



Algebraic Solution

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

LESSON ONE - *Slope of a Line*

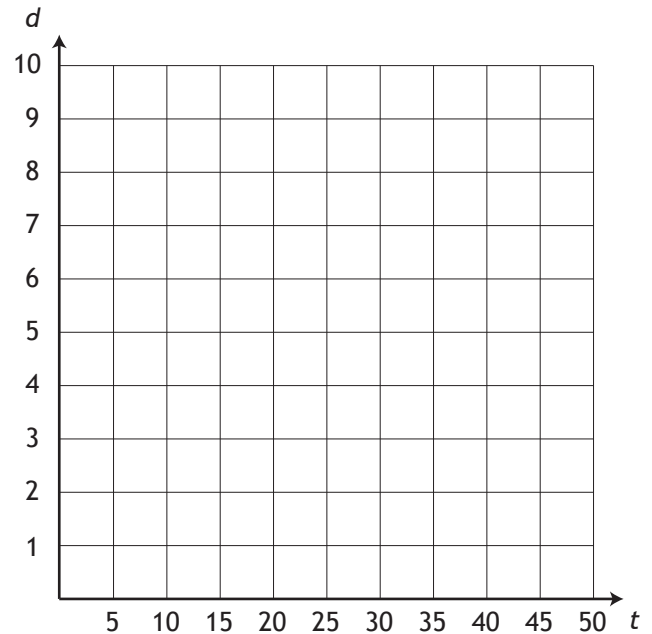
Lesson Notes

Example 4

The equation relating distance and time is $d = st$, where s is the speed. In a physics experiment, a motorized toy car drives across the floor and its position is measured every five seconds.

a) Graph the data

elapsed time (seconds)	position (metres)
0	0
5	0.9
10	1.8
15	2.7
20	3.6
25	4.5
30	5.4
35	6.3
40	7.2
45	8.1
50	9.0




b) Determine the speed of the car.

c) State the dependent and independent variables, then write an equation that relates the variables.

Linear Functions

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d) How far would the car go if it drove for 8 minutes?

e) How many hours would it take for the car to travel 1 km?